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| **Outcome**  **(rephrase themes)** | **Research questions** | **Objectives** | **Outputs** | **Activities** |
| Enhanced productivity of crop and livestock systems in selected semi-arid and humid agro-ecologies of ESA | What are the optimum integrated crop livestock technologies that result in increased allocative efficiency on farms. | 1. To refine and test scalable integrated crop-livestock technologies that equitably optimize productivity for specific agro ecologies 2. To develop functional linkages between crop livestock enterprises that ensure increased availability of diverse crop and livestock products for consumption and income. | 1. Proven integrated crop-livestock technologies for improved productivity, diversified diets, and incomes validated and delivered in target agro ecologies. 2. Integrated climate smart crop-livestock technologies delivered in targeted semi-arid areas 3. The awareness and use of locally available resources and fertilizer, manure, crop residues at community level emphasized and enhanced 4. The impact of crop residues, forages and other locally available organic resources on productivity quantified and disseminated. | 1. Support for legume, cereal, vegetable and forage seed dissemination through community seed/seedling systems and agribusiness incubation. 2. Farmer participatory experimentation with integrated crop livestock technologies on farm situations 3. Scaling up and disseminate best bet integrated crop livestock technologies to reach an impact on small scale farmers in a landscape context. |
| 1. To adapt and disseminate cost effective, labour saving and gender sensitive technologies | 1. Labour saving and gender sensitive technologies delivered | 1. Establish adaptive field experiments with mineral and animal derived organic manure 2. Conduct experiments to demonstrate the use and impact of crop residues, forages and other locally available organic resources as animal feed, manure and other HH related multipurpose uses 3. Establish the production, handling, storage quality and use of manure produced under different production systems 4. Establish pilot study sites in other areas of similar agro-ecologies 5. Conduct extrapolations based on GIS and agro-ecology information 6. Support local partners through training on appropriate technology delivery 7. Use crop livestock models for trade-off analysis |